

U.S. Patent Application Serial No. **10/540,027**
Amendment filed July 29, 2009
Reply to OA dated May 1, 2009

REMARKS

Claims 1-13 and 16-38 are pending in this application. Claims 30-35 are canceled without prejudice or disclaimer, and claims 1-13 and 16-29 are amended herein. Upon entry of this amendment, claims 1-13, 19-29 and 36-38 will be pending. Entry of this amendment and reconsideration of the rejections are respectfully requested.

No new matter has been introduced by this Amendment. Support for the amendments to the claims is detailed below.

In addition to the amendments discussed below, minor amendments have been made to the claims for grammatical clarity. The recitation "within a range from ..." has been amended to --within a range of--. And the recitation at the beginning of the dependent claims has been amended from "A method" to --The method--.

Claims 1-6, 8-13, 16-24, and 26-28 are rejected under 35 U.S.C. §102(b) as being anticipated by Hatano et al. (US 5,527,616). (Office action paragraph no. 4)

Reconsideration of the rejection is respectfully requested in view of the amendments to the claims.

Independent claims 1-3 and 8-10 have been amended to incorporate the limitation recited in claims 30-35, that "the foaming degree of the polyurethane foam sheet is within a range of 1.5 to 3.0." Claims 30-35 had depended respectively from claims 1-3 and 8-10.

In addition, claims 1-3 and 8-9 have each been amended as follows: "water foaming said liquid mixture by bringing said laminate into contact with water vapor by spray misting." A related recitation of "spray misting" is also made in claim 10. Support for this amendment may be found in the specification, for example, at page 17, lines 10-19, and page 47, lines 15-17.

In addition, claims 1-3 and 8-10 have each been amended to recite: "the atmospheric temperature at the surface of the sheet-like liquid mixture is set to a temperature within a range of 40 to 120°C, the atmospheric humidity is set to at least 60%, and the humidification time period is set to a value within a range of 0.5 seconds to 10 minutes." Support for this amendment may be found in the specification at page 17, lines 1-9.

Applicant notes that claims 30-35 were not rejected in the original rejection, and the Examiner has therefore apparently acknowledged that Hatano does not disclose the limitation on foaming degree in those claims, which is now incorporated into the pending claims.

In addition to the fact that Hatano does not disclose the "foaming degree" limitation of the present claims, it is also clear that a foaming degree within a range of 1.5 to 3.0 would not be inherent in Hatano, given Hatano's disclosure at column 7, lines 13-16, that evolution of foams due to carbonic acid gas is a problem that occurs at conditions outside of Hatano's inventive range.

Applicant further submits that Hatano does not disclose the specific step of "spray misting," and does not disclose setting the atmospheric temperature and humidity conditions as recited in the amended claims.

Therefore, the claims, as amended, are not anticipated by Hatano et al. '616.

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Claims 7, 25, and 29-35 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hatano et al. (US 5,527,616). (Office action paragraph no. 6)

The rejection of claims 30-35 is moot in view of the cancellation of those claims without prejudice or disclaimer. As noted above, the limitations of claims 30-35 have been incorporated into claims 1-3 and 8-10, respectively, as well as the process limitation of "spray misting" and a process step of setting the atmospheric temperature and humidity at the surface of the sheet-like liquid mixture at specifically recited values. Applicant submits that claims 1-3 and 8-10, as amended, as well as dependent claims 7, 25 and 29, are not obvious over Hatano et al.

With regard to the limitations on the foaming degree of the polyurethane foam sheet, the Examiner states that Hatano does not disclose the foaming degree of the polyurethane foam made, but that it would have been obvious "that the polyurethane foam produced by the method discussed above would have the same foaming degree because all of the limitations of the method of making the same polyurethane foam are disclosed directly or it would have been obvious to optimize over the teachings of the prior art"

Applicant respectfully disagrees.

First of all, the Examiner's statement that Hatano's method "would have the same foaming degree because all of the limitations of the method of making the same polyurethane foam are disclose directly" is based on an incorrect premise. The process conditions in the present specification to achieve the water foaming (see, for example, page 47, lines 15-18) are clearly different from those in Hatano.

As shown in Comparative Example 1 of the present invention, **the foam sheet obtained by simply standing without water vapor spray misting underwent almost no foaming and exhibited a foaming degree of 1.0** and also displayed poor levels of heat resistance and resistance to hydrolysis. Therefore, **it is clear that the foaming degree within the range of 1.5 to 3.0 in the present invention can not be achieved by Hatano.**

Regarding the Examiner's argument of "optimizing" Hatano, it is clear from the disclosure of Hatano at column 7, lines 13-16, that evolution of foams due to carbonic acid gas is a problem that occurs at conditions outside of Hatano's inventive range. In addition, column 11, lines 49-55, also implies that foams are to be avoided. The foaming degree represents the volume ratio V_2/V_1 (page 42, line 16, of the specification). A foaming degree of 1.5 to 3.0 would clearly be unacceptable to Hatano, and optimization of Hatano would not result in a foaming degree of this value.

In addition, the claims, as amended, require "bringing said sheet-like liquid mixture into contact with water vapor by spray misting." By contrast, Hatano specifically discloses at column 14, lines 29-31, that "the polyurethane type hot melt is cured with the moisture contained in the open air." This method is clearly indicated as important to Hatano's invention. Hatano discusses other methods of providing small amounts of water to the adhesive, but there is no disclosure of, or suggestion for, spray misting the sheet-like liquid mixture with water vapor.

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Moreover, there is no disclosure in Hatano of the atmospheric temperature and humidity limitations for the surface of the sheet-like liquid that have been added to the present claims.

The present invention is different from Hatano in that **water vapor is directly contacted (spray misted) with the liquid mixture, while the polyurethane type hot melt is cured with the moisture contained in the open air in Hatano.** According to the present invention, it is possible to enable the resin sheet having an **uniform foam shape**, a good appearance of the surface and a soft texture or the like.

Claims 7, 25, and 29-35 are therefore not obvious over Hatano et al. (US 5,527,616).

Claims 36-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hatano et al. (US 5,527,616) as applied to claims 1-13 and 16-29 above and further in view of Tokunaga (US 4,419,457). (Office action paragraph no. 7)

Reconsideration of the rejection is respectfully requested.

The Examiner states that Hatano does not disclose using the polyurethane foam for a synthetic leather. The Examiner cites Tokunaga as disclosing polyurethane foams for synthetic leather.

However, Applicant submits that Hatano discloses a laminate for flexible packaging, with the implication that this will be used in food packaging (column 1, lines 14-18; column 2, lines 7-63). There is no disclosure in Hatano that this can be used as an artificial leather.

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Tokunaga discloses an open-cell polyurethane foam made from a polyurethane-forming composition and a fluorocarbon compound (abstract). The fluorocarbon serves as a foaming agent to create the open-cell structure (see column 2, lines 37-57).

Hatano's polyurethane is not made using a foaming agent and, as Applicant has argued above, Hatano specifically avoids any foaming. Moreover, Hatano's polyurethane is, in fact, the adhesive **in a laminate**, and there is nothing resembling an open-cell foam structure in Hatano. The structure of Hatano's polyurethane is therefore quite different from that of Tokunaga, and there is no suggestion in Tokunaga for using Hatano's polyurethane as an artificial leather. In fact, there is no apparent way to use the adhesive in the laminate of Hatano as a substitute for Tokunaga's open-cell foam.

Claims 36-38 are therefore not obvious over Hatano et al. and Tokunaga, taken separately or in combination.


If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosure: Request for Continued Examination

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